Montana Fish, Wildlife & Parks

1400 South 19th Avenue
Bozeman, MT 59718

September 30, 2016

To: Governor's Office, Mike Volesky, State Capitol, Room 204, P.O. Box 200801, Helena, MT 59620-0801
Environmental Quality Council, State Capitol, Room 106, P.O. Box 201704, Helena, MT 59620-1704
Dept. of Environmental Quality, Metcalf Building, P.O. Box 200901, Helena, MT 59620-0901
Dept. of Natural Resources & Conservation, P.O. Box 201601, Helena, MT 59620-1601
Montana Fish, Wildlife & Parks:

Director's Office	Parks Division	Lands Section	FWP Commissioners
Fisheries Division	Legal Unit	Wildlife Division	Design & Construction

MT Historical Society, State Historic Preservation Office, P.O. Box 201202, Helena, MT 59620-1202
MT State Parks Association, P.O. Box 699, Billings, MT 59103
MT State Library, 1515 E. Sixth Ave., P.O. Box 201800, Helena, MT 59620
James Jensen, Montana Environmental Information Center, P.O. Box 1184, Helena, MT 59624
Janet Ellis, Montana Audubon Council, P.O. Box 595, Helena, MT 59624
George Ochenski, P.O. Box 689, Helena, MT 59624
Jerry DiMarco, P.O. Box 1571, Bozeman, MT 59771
Montana Wildlife Federation, P.O. Box 1175, Helena, MT 59624
Wayne Hurst, P.O. Box 728, Libby, MT 59923
Jack Jones, 3014 Irene St., Butte, MT 59701
Jack Atcheson, 2309 Hancock Avenue, Butte MT 59701
Beaverhead Conservation District, 420 Barrett Street, Dillon, MT 59725
U.S. Army Corp of Engineers, Helena
U.S. Fish and Wildlife Service, Helena
U.S. Fish and Wildlife Service, 420 Barrett Street, Dillon, MT 59725
Big Hole Watershed Committee, P.O. Box 931, Butte, MT 59703
Montana Trout Unlimited, P.O. Box 7186, Missoula, MT 59807
Dan Vermillion, FWP Commissioner, Livingston MT
Earnest and Colleen Bacon, 2215 Fishtrap Creek Road, Wisdom, MT 59761
Dept. of Natural Resources and Conservation, 730 N. Montana Street, Dillon, MT 59725-9424
George Grant Chapter of Trout Unlimited, P.O. Box 563, Butte, MT 59703
Skyline Sportsmen, P.O. Box 173, Butte, MT 59703
Anaconda Sportsmen, 2 Cherry, Anaconda, MT 59711

Ladies and Gentlemen:

An Environmental Assessment (EA) was prepared for the restoration of westslope cutthroat trout to Cherry Creek near Melrose, MT in 2011. Cherry Creek was treated with rotenone in 2011 to remove non-native brook trout and hybridized cutthroat trout from the drainage beginning at its headwaters in Cherry and Granite lakes to a constructed fish barrier roughly 1.5 miles upstream from the confluence with the Big Hole River. In 2015 Cherry Creek was electrofished upstream of the fish barrier and brook trout were found. The presence of reproducing brook trout is a serious concern for cutthroat trout conservation because brook trout outcompete and displace native cutthroat trout. In the initial EA written for this project it was stated if brook trout were not completely removed in 2011 an additional treatment would be conducted in 2012. If non-native trout persisted beyond 2012 a supplemental analysis would be performed. FWP is proposing to re-treat a section of Cherry Creek to remove the discovered brook trout. The document accompanying this letter represents the supplemental analysis.

FWP has deduced that a small number of juvenile brook trout survived the initial treatment in 2011 in springs located on the National Forest. Spring areas can be problematic when removing fish from streams with piscicides because of their constant source of fresh water providing refuge for fish and limiting exposure to applied piscicides. It appears that in Cherry Creek a small number (5-10) of juvenile brook trout (2 inch fish) survived the initial treatment in 2011in the springs. These fish have since grown and began to reproduce beginning in 2014 which resulted in juvenile fish being discovered in 2015. A total of 3 adult and 20 juvenile brook trout were captured in 2015. Since 2011 multiple consecutive-year treatment has become the accepted standard for rotenone projects in streams. A natural fish barrier is present in Cherry Creek roughly 7 miles upstream of the constructed fish barrier and about 3 miles downstream of Cherry and Granite lakes. This barrier historically precluded any upstream brook trout passage and only hybridized cutthroat trout were present upstream. Testing was completed in 2016 upstream of this natural barrier and no brook trout were present, thereby allowing a partial treatment of the project area.

This EA is available for review in Helena at FWP's Headquarters, the State Library, and the Environmental Quality Council. It also may be obtained from FWP at the address provided above, or viewed on FWP's Internet website: http://www.fwp.mt.gov .

Montana Fish, Wildlife & Parks invites you to comment on the attached proposal. Public comment will be accepted until October 14th, 2016 @ 5:00 pm. Comments should be sent to the following:

Montana Fish, Wildlife & Parks
Cherry Creek Supplemental EA
Attn: Jim Olsen
1820 Meadowlark Ln.
Butte, MT 59701

Or e-mailed to: jimolsen@mt.gov

Sincerely,

Sam B. Sheppard
Region 3 Supervisor
Montana Fish, Wildlife & Parks

MONTANA FISH, WILDLIFE & PARKS
FISHERIES DIVISION

Supplemental Environmental Assessment for Westslope Cutthroat Trout Restoration in Cherry Creek, Big Hole River

A. Project Background and Need for Supplemental EA

An Environmental Assessment (EA) was prepared for the restoration of westslope cutthroat trout to Cherry Creek near Melrose, MT in 2011. Cherry Creek was treated with rotenone in 2011 to remove non-native brook trout and hybridized cutthroat trout from the drainage beginning at its headwaters in Cherry and Granite lakes to a constructed fish barrier roughly 1.5 miles upstream from the confluence with the Big Hole River. In 2012 a handful of brown trout were found in the lower reaches of the stream and the lower 3 miles of stream were retreated with rotenone. Subsequent electrofishing in the stream found no non-native fish so Cherry Creek was restocked with westslope cutthroat trout. In 2015 Cherry Creek was electrofished from the fish barrier upstream roughly 6 miles. During these surveys it was discovered that brook trout were present in the stream on the National Forest and these brook trout had reproduced the previous year. The presence of reproducing brook trout is a serious concern for cutthroat trout conservation because brook trout outcompete and displace native cutthroat trout. In the initial EA written for this project it was stated if brook trout were not completely removed in 2011 an additional treatment would be conducted in 2012. If non-native trout persisted beyond 2012 a supplemental analysis would be performed. This document represents that supplemental analysis.

It is believed that a small number of juvenile brook trout survived the initial treatment in 2011 in springs located in the general area where brook trout were found in 2015 (Figure 1). Spring areas can be problematic when removing fish from streams with piscicides because of their constant source of fresh water which can provide refuge for fish and limit exposure to applied piscicides. Juvenile fish are present in these small springs because they often contain spawning habitat and they are often free from larger predatory fish. It appears that in Cherry Creek a small number (5-10) of juvenile brook trout (2 inch fish) survived the initial treatment in 2011in springs roughly 6 miles upstream of the barrier. These fish have since grown and began to spawn in 2014 which resulted in juvenile fish also being discovered in 2015. A total of 3 adult and 20 juvenile brook trout were captured in 2015. Since 2011 it has become the accepted practice for rotenone projects in streams to treat consecutive years. Treating in consecutive years has proven to be more effective at removing non-native fish. Juvenile fish that may survive treatments in springs or other juvenile habitats that are less exposed to piscicides move to the mainstem stream as they grow making them susceptible to exposure to rotenone in subsequent treatments.

A natural fish barrier is present in Cherry Creek roughly 7 miles upstream of the constructed fish barrier and about 3 miles downstream of Cherry and Granite lakes. This barrier historically precluded any upstream brook trout passage and only cutthroat trout were present upstream. No electrofishing was performed upstream of this barrier in 2015. Testing will be done in 2016 to determine if brook trout are present upstream of this natural barrier.

Proposed Action

To ensure the successful restoration of westslope cutthroat trout to Cherry Creek complete removal of brook trout is required. Studies have shown that brook trout will outcompete and displace westslope cutthroat trout through time. This has been particularly true in the upper Missouri River drainage including Cherry Creek. To remove brook trout from Cherry Creek, FWP is proposing to retreat the stream from the natural fish barrier to the constructed fish barrier which is a distance of roughly 7 miles of stream (assuming no brook trout are present upstream of the natural fish barrier). In 2015 brook trout were not detected upstream, but if brook trout are detected upstream from the natural barrier, Cherry Creek would be treated downstream form Cherry and Granite lakes. **Cherry and Granite lakes would not be treated with rotenone** as no brook trout have ever been found in the lakes; however, if brook trout have been illegally introduced, they too would be included in the project. All waters that are found containing non-native fish in the Cherry Creek drainage upstream of the constructed fish barrier would be treated with rotenone. It is anticipated that a minimum of 2 treatments across a minimum of 2 years will be necessary to remove non-native fish, but additional treatments may be necessary if non-native fish persist. Additionally, a private pond is present on a private in-holding within the National Forest. This pond is fed by Cherry Creek and therefore it is possible that brook trout have colonized the pond. FWP will work with the private land owner to remove brook trout from the pond and aid in restocking the pond if removal of fish is necessary. Treated waters in Cherry Creek would be neutralized at the constructed fish barrier with potassium permanganate to prevent rotenone from traveling downstream of the barrier, identical to the original treatment in 2011.

Prior to treatment with rotenone, Cherry Creek will be electrofished and all stocked westslope cutthroat trout captured will be salvaged. These fish will either be transported upstream of the natural fish barrier or will be transplanted to other waters such as Van Houten Lake. Once it is confirmed that non-native fish have been removed from Cherry Creek, the stream will be restocked with westslope cutthroat trout. The source for restocking the stream will be non-hybridized westslope cutthroat trout from the Big Hole drainage. It is likely that the primary source of fish will be Cherry and Granite lakes. Eggs would be collected from these lakes and stocked into Cherry Creek downstream.

No Action Alternative

If FWP does not retreat Cherry Creek with rotenone, the population of brook trout is predicted to increase over time and overrun the westslope cutthroat in the stream. Therefore, efforts to establish a genetically pure population of westslope cutthroat trout in Cherry Creek would not occur given the investment in native fish conservation in the drainage and since the no action

alternative would not meet the objectives of the original EA, this alternative has been eliminated from further consideration.

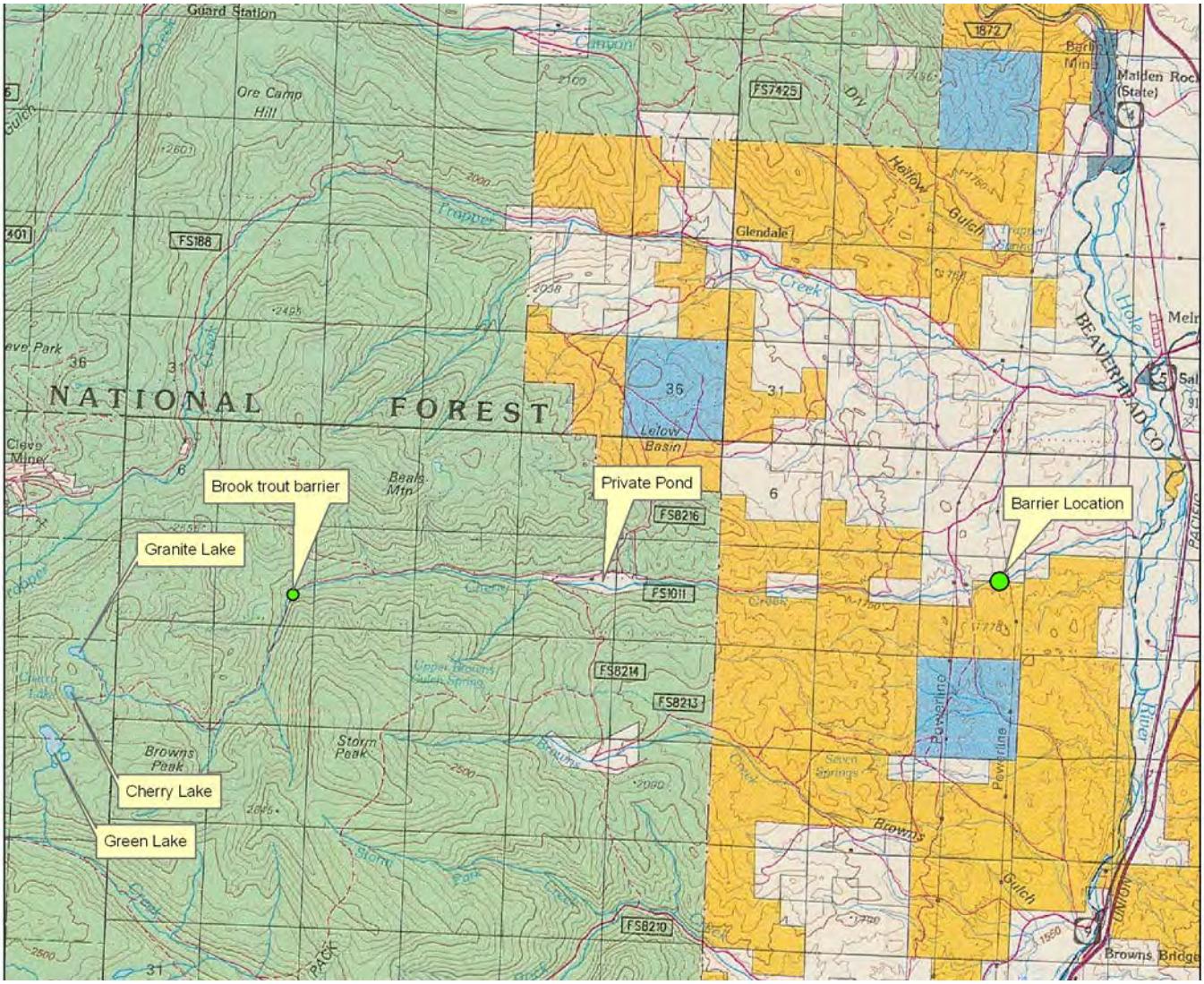

Figure 1. Map of Cherry Creek drainage showing important geographical features.

ENVIRONMENTAL REVIEW

A. PHYSICAL ENVIRONMENT

1. LAND RESOURCES Will the proposed action result in:	IMPACT Unknown	None	Minor	Potentially Significant	Can Impact Be Mitigated	Comment Index
a. Soil instability or changes in geologic		X				

substructure?						
b. Disruption, displacement, erosion, compaction, moisture loss, or over-covering of soil which would reduce productivity or fertility?		X				
c. Destruction, covering or modification of any unique geologic or physical features?		X				
d. Changes in siltation, deposition or erosion patterns that may modify the channel of a river or stream or the bed or shore of a lake?		X				
e. Exposure of people or property to earthquakes, landslides, ground failure, or other natural hazard?		X				

2. <u>WATER</u> Will the proposed action result in:	**IMPACT Unknown**	**None**	**Minor**	**Potentially Significant**	**Can Impact Be Mitigated**	**Comment Index**
a. Discharge into surface water or any alteration of surface water quality including but not limited to temperature, dissolved oxygen or turbidity?			X		Yes	2a
b. Changes in drainage patterns or the rate and amount of surface runoff?		X				
c. Alteration of the course or magnitude of flood water or other flows?			X		No	2c
d. Changes in the amount of surface water in any water body or creation of a new water body?		X				
e. Exposure of people or property to water related hazards such as flooding?			X			
f. Changes in the quality of groundwater?		X				2f
g. Changes in the quantity of groundwater?		X				
h. Increase in risk of contamination of surface or groundwater?			X		Yes	2a,f
i. Effects on any existing water right or reservation?		X				
j. Effects on other water users as a result of any alteration in surface or groundwater quality?			X		Yes	2j

k. Effects on other users as a result of any alteration in surface or groundwater quantity?		X				
l. Will the project affect a designated floodplain?		X				
m. Will the project result in any discharge that will affect federal or state water quality regulations? (Also see 2a)			X		YES	2m

Comment 2a: The proposed project is designed to intentionally introduce a pesticide to surface water to remove unwanted fish. The impacts would be short term and minor. CFT Legumine 5% liquid rotenone is an EPA registered pesticide and is safe to use for removal of unwanted fish, when handled and applied according to the product label. The concentration of rotenone to be used is 1 part formulation to one million parts of water (ppm).

There are three ways in which rotenone can be detoxified once applied. The most common method is to allow natural breakdown to occur. Rotenone is a compound that is susceptible to natural breakdown (detoxification) through a variety of mechanisms such as water chemistry, water temperature, exposure to organic substances, exposure to air, and sunlight intensity (Ware 2002; ODFW 2002; Loeb and Engsrtom-Heg 1970; Engstrom-Heg 1972; Gilderhus et al. 1986). Rotenone persistence studies by Gilderhus et al. (1986) and Dawson et al. (1991) found that in cool water temperatures of 32 to 46^{o}F the half-life ranged from 3.5 to 5.2 days. Gilderhus et al. (1986) reported that 30% mortality was experienced in rainbow trout exposed to degrading concentrations of actual rotenone (0.004 ppm) in 46^{o}F pond water 14 days after a treatment. By day 18 the concentrations were sub lethal to trout. The second method for detoxification involves basic dilution by fresh water. This may be accomplished by fresh ground water or surface water flowing into a lake or stream. The final method of detoxification involves the application of an oxidizing agent like potassium permanganate. This dry crystalline substance is mixed with stream or lake water to produce a concentration of liquid sufficient to detoxify the rotenone. Detoxification is accomplished after about 15-30 minutes of exposure time between the two compounds (Prentiss Inc. 1998, 2007). The lakes would likely naturally detoxify within 3 to 5 weeks following treatment. The stream will also be allowed to naturally detoxify down to the fish migration barrier. We expect this to occur within 24-48 hr after application of Legumine because of natural breakdown processes and dilution from freshwater sources. At the fish barrier, potassium permanganate will be used to detoxify the rotenone present in the stream and prevent fish killing concentrations of rotenone from traveling more than ½ mile downstream.

Dead fish would result from this project. Bradbury (1986) reported that approximately 70% of rotenone fish killed in Washington lakes never surfaced. Although no trout were involved with his study, Parker (1970) reported that at water temperatures of 40^{o}F and less, dead fish required 20-41 days to surface. The most important factors inhibiting fish from ever surfacing are cooler water (<50^{o}F) and deep water (>15 feet). In similar projects in the Beartooth Mountains in Montana, very few fish floated to the surface. It was more common for the occasional fish to lose its equilibrium and beach itself along the shoreline than to bloat and float to the surface.

Bradbury (1986) reported that 9 of 11 water bodies in Washington treated with rotenone experienced an algae bloom shortly after treatment. This is attributed to the input of phosphorus to the water as a result of decaying fish. Bradbury further notes that approximately 70% of the phosphorus content of the fish stock would be released into the lake through bacterial decay. Any changes or impacts to water quality resulting from decaying fish would be short term and minor.

Comment 2f: No contamination of groundwater is anticipated to result from this project. Rotenone binds readily to sediments, and is broken down by soil and in water (Skaar 2001; Engstrom-Heg 1971, 1976; Ware 2002). Rotenone moves only one inch in most soil types; the only exception would be sandy soils where movement is about three inches (Hisata 2002). In California, studies where wells were placed in aquifers adjacent to and downstream of rotenone applications have never detected rotenone, rotenolone, or any of the other organic compounds in the formulated products (CDFG 1994). Case studies in Montana have concluded that rotenone movement through groundwater does not occur. For example, at Tetrault Lake, Montana neither rotenone nor inert ingredients were detected in a nearby domestic well, which was sampled two and four weeks after applying 90 ppb rotenone to the lake. This well was chosen because it was down gradient from the lake and also drew water from the same aquifer that fed and drained the lake. In 1998, a Kalispell-area pond was treated with Prenfish 5% rotenone. Water from a well, located 65 feet from the pond, was analyzed and no evidence of rotenone was detected. In 2001, another Kalispell-area pond was treated with Prenfish 5% rotenone. Water from a well located 200 feet from that pond was tested four times over a 21 day period and showed no sign of contamination. In 2005, FWP treated a small pond near Thompson Falls with Prenfish to remove pumpkinseeds and bass. A well located 30 yards from the pond was tested and neither Prenfish nor inert ingredients were found in the well. In Soda Butte Creek near Cooke City, Montana a well at a Forest service campground located 50 ft from a treated stream was tested immediately following treatment with Prenfish and 10 months later and no traces of rotenone were found (Olsen 2006). Because rotenone is known to bind readily with stream and lake substrates, we do not anticipate any contamination of ground water as a result of this project.

Comment 2j: The Legumine label states "….Do not use water treated with rotenone to irrigate crops or release within 1/2 mile upstream of a potable water or irrigation water intake in a standing body of water such as a lake, pond or reservoir…" There are 4 irrigation water diversion sites located within the proposed treatment area. Two irrigate the landlocked private land within the National Forest, the third and fourth irrigate adjacent ground on the north and south side of the stream in section 8 (Figure 4) and the fifth is located downstream of the barrier site in the detoxification reach. The project has been and will continue to be coordinated with the private landowners such that all irrigation diversions are closed for 24-48 hours while treated waters are present in Cherry Creek. The timing of the treatment in late summer (late Aug or early Sept) will mitigate the need for irrigation water because most of the diversions on Cherry Creek are closed by that time in the year. Therefore, the impacts to irrigation should be short-term and minor.

Comment 2m: FWP would submit a Notice of Intent for the purpose of applying a pesticide to a stream from Montana DEQ under the Pesticide General Permit.

3. AIR **Will the proposed action result in:**	**IMPACT Unknown**	**None**	**Minor**	**Potentially Significant**	**Can Impact Be Mitigated**	**Comment Index**
a. Emission of air pollutants or deterioration of ambient air quality? (also see 13 (c))		X				
b. Creation of objectionable odors?			X		yes	3b
c. Alteration of air movement, moisture, or temperature patterns or any change in climate, either locally or regionally?		X				
d. Adverse effects on vegetation, including crops, due to increased emissions of pollutants?		X				
e. Will the project result in any discharge which will conflict with federal or state air quality regs?		X				

Comment 3b: CFT Legumine does not contain the same level of aeromatic petroleum solvents (toluene, xylene, benzene and naphthalene) of other rotenone formulations and as a consequence does not have the same odor concerns and has less inhalation risks as other formulations of rotenone.

4. VEGETATION **Will the proposed action result in:**	**IMPACT Unknown**	**None**	**Minor**	**Potentially Significant**	**Can Impact Be Mitigated**	**Comment Index**
a. Changes in the diversity, productivity or abundance of plant species (including trees, shrubs, grass, crops, and aquatic plants)?			X			4a
b. Alteration of a plant community?		X				
c. Adverse effects on any unique, rare, threatened, or endangered species?		X				
d. Reduction in acreage or productivity of any agricultural land?		X				
e. Establishment or spread of noxious weeds?		X				
f. Will the project affect wetlands, or prime and unique farmland?		X				

Comment 4a: There would be some disturbance of vegetation along the stream and lake shore during the treatment. Rotenone does not have an effect on plants at concentrations used to kill fish. Impacts from trampling vegetation are expected to be short term and minor.

5. FISH/WILDLIFE **Will the proposed action result in:**	**IMPACT Unknown**	**None**	**Minor**	**Potentially Significant**	**Can Impact Be Mitigated**	**Comment Index**
a. Deterioration of critical fish or wildlife habitat?		X				
b. Changes in the diversity or abundance of game animals or bird species?			X		yes	5b
c. Changes in the diversity or abundance of nongame species?			X		yes	5c
d. Introduction of new species into an area?			X			5d
e. Creation of a barrier to the migration or movement of animals?		X				
f. Adverse effects on any unique, rare, threatened, or endangered species?			X			5f
g. Increase in conditions that stress wildlife populations or limit abundance (including harassment, legal or illegal harvest or other human activity)?			X			5g
h. Will the project be performed in any area in which T&E species are present, and will the project affect any T&E species or their habitat? (Also see 5f)			X		Yes	5f
i. Will the project introduce or export any species not presently or historically occurring in the receiving location? (Also see 5d)		X				

Comment 5b: This project is designed to eradicate non-native brook trout and hybridized cutthroat-rainbow trout in Cherry Creek upstream of the proposed fish migration barrier. No other game fish species are present within the project area. However, these impacts are minor and temporary because the stream would be restocked with non-hybridized westslope cutthroat trout once it has been verified to be free of non-native fish. The stream would be stocked for 3 consecutive years with westslope cutthroat trout eggs or live fish from within or near the Big Hole drainage. There would be no proposed changes in the fishing regulations in the lakes or the stream. Rotenone when applied at fish killing concentration has no impact on terrestrial wildlife including birds and mammals that consume dead fish.

Comment 5c: Non-game (non-target) species that would be impacted include zooplankton and some aquatic insects. Columbia spotted frogs are present at Cherry and Granite lakes and in Cherry Creek and could be impacted but because of the timing of the project, impacts are anticipated to be minimal. Metamorphosed amphibians that breathe air are not affected by rotenone at fish killing concentrations; however, non metamorphosed tadpoles that respire through their skin or gills are affected. The timing of this project in late summer/early fall should mitigate any impacts to spotted frogs because most will have metamorphosed into the air-breathing adult form.

Aquatic Invertebrates:

Numerous studies indicate that rotenone has temporary or minimal effects on aquatic invertebrates. One study reported that no significant reduction in aquatic invertebrates was observed due to the effects of rotenone, which was applied at levels twice as high as the levels proposed for this project (Houf and Campbell 1977). Chandler and Marking (1982) found that clams and snails were between 50 and 150 times more tolerant than fish to Noxfish (5% rotenone formulation). In all cases, the reduction of aquatic invertebrates was temporary, and most treatments used a higher concentration of rotenone than proposed for this project (Schnick 1974). In a study on the relative tolerance of different aquatic invertebrates to rotenone, Engstrom-Heg et al. (1978) reported that the long-term impacts of rotenone are mitigated because those insects that were most sensitive to rotenone also tended to have the highest rate of recolonization. Temporary changes in aquatic invertebrate community structure due to a rotenone treatment could be similar to what is observed after natural (e.g. fire) and anthropogenic (livestock grazing) disturbances (Wohl and Carline 1996; Mihuc and Minshall. 2005; Minshall 2003), though the physical impacts and resulting modifications of invertebrate assemblages after these types disturbances can last for a much longer period than a piscicide treatment.

Because of their short life cycles (Anderson and Wallace 1984), good dispersal ability (Pennack 1989), and generally high reproductive potential (Anderson and Wallace 1984), aquatic invertebrates are capable of rapid recovery from disturbance (Boulton et al. 1992; Matthaei et al. 1996). Headwater reaches of tributaries to Cherry Creek that do not hold fish would not be treated with rotenone and would provide a source of aquatic invertebrate colonists that will drift downstream. In addition, recolonization would include aerially dispersing invertebrates from downstream areas (e.g. mayflies, caddisflies, dipterans, stoneflies).

The possibility of eliminating a rare or endangered species of aquatic invertebrate in Cherry Creek by treating with rotenone is very unlikely. In SW Montana, as part of a MEPA process, aquatic invertebrates are routinely collected prior to WCT restoration projects in mountain streams (e.g., Eureka, Little Tepee, Little Tizer, Elkhorn, Crazy, Whitehorse, Soda Butte creeks). In all cases, these collections have shown aquatic invertebrate assemblages typical of headwater streams in southwestern Montana, and in no cases have threatened or endangered species been discovered. There are no known threatened or endangered invertebrates in the area surrounding Cherry Creek. FWP expects that Cherry Creek contains the same type of aquatic invertebrate assemblage as found in other nearby streams and the possibility of eliminating a rare or endangered species is minimal.

Both Anderson (1970) and Kiser et al. (1963) reported that most zooplankton species survive a rotenone treatment via their highly resilient egg structures. In addition, parthenogenesis of some female plankton occurs, causing sexual dimorphism, which greatly increases plankton density in times of population distress. Among the aforementioned studies, variation in climate, physical environment, and water chemistry would likely cause subtle differences in results in other areas.

Case studies conducted on Devine Lake in the Bob Marshall Wilderness from 1994-1996 indicate that invertebrates actually increased in number and very slightly increased in diversity following a rotenone treatment (Rumsey et al. 1996). This is supported by observations made by Cushing and Olive (1956), who reported that oligochaetes (worms) increased in number after a rotenone treatment and then became stable. *Gammarus* species (fresh water shrimp), a common fish food item, were detected in Devine Lake only when fish were present. Neighboring Ross Lake, in the Bob Marshall Wilderness, is fishless and was used to measure natural insect and plankton variation during the Devine Lake treatment and evaluation. Invertebrate numbers in Ross Lake were reported to be relatively stable, but the diversity of insects fluctuated considerably over time. Many studies report that aquatic insects are much less sensitive to rotenone treatment than fish (Schnick 1974). Houf and Campbell (1977) reported no short-term or long-term effects on species abundance or insect emergence in three ponds treated with 0.5 to 2.0 mg/L of Noxfish 5% rotenone. In a study on the relative tolerance of different aquatic invertebrates to rotenone, Engstrom-Heg et al. (1978) reported that the long-term impacts of rotenone are mitigated because those insects that were most sensitive to rotenone also tended to have the highest rate of recolonization. Aquatic invertebrates in general are capable of rapid recovery from disturbance (Matthaei et al. 1996).

Birds and Mammals:

Mammals are generally not affected by rotenone at fish killing concentrations because they neutralize rotenone by enzymatic action in their stomach and intestines (AFS 2002). Studies of risk for terrestrial animals found that a 22 pound dog would have to drink 7,915 gallons of treated lake water within 24 hours, or eat 660,000 pounds of rotenone-killed fish, to receive a lethal dose (CDFG 1994). The State of Washington reported that a half pound mammal would need to consume 12.5 mg of pure rotenone to receive a lethal dose (Bradbury 1986). Considering the only conceivable way an animal can consume rotenone under field conditions is by drinking lake or stream water or consuming dead fish, a half pound animal would need to drink 33 gallons of water treated at 2 ppm.

The EPA (2007) made the following conclusion for small mammals and large mammals;

> *When estimating daily food intake, an intermediate-sized 350 g mammal will consume about 18.8 g of food. Using data previously cited from the common carp with a body weight of 88 grams, a small mammal would only consume 21% (18.8/88) of the total carp body mass. According to the data for common carp, total body residues of rotenone in carp amounted to 1.08 µg/g. A 350-g mammal consuming 18.8 grams represents an equivalent dose of 20.3 µg of rotenone; this value is well below the median lethal dose of*

*rotenone (13,800 µg) for similarly sized mammals. When assessing a large mammal, 1000 g is considered to be a default body weight. A 1000 g mammal will consume about 34 g of food. If the animal fed exclusively on carp killed by rotenone, the equivalent dose would be 34 g *1.08 µg/g or 37 µg of rotenone. This value is below the estimated median lethal equivalent concentration adjusted for body weight (30,400 µg). Although fish are often collected and buried to the extent possible following a rotenone treatment, even if fish were available for consumption by mammals scavenging along the shoreline for dead or dying fish, it is unlikely that piscivorous mammals will consume enough fish to result in observable acute toxicity.*

One study, in which rats were injected with rotenone for a period of weeks, reported finding lesions characteristic of Parkinson's disease (Betarbet et al. 2000). However, the results have been challenged based upon the following errors in experimental methodology: (1) that the continuous intravenous injection method used to treat the rats leads to "continuously high levels of the compound in the blood," and (2), that dimethyl sulfoxide (DMSO) was used to enhance tissue penetration (normal routes of exposure actually slow introduction of chemicals into the bloodstream). Finally, injecting rotenone into the body is not a normal way of assimilating the compound under field applications as proposed in Cherry Creek. Similar studies (Marking 1988) have found no Parkinson-like results. Extensive research has demonstrated that rotenone does not cause birth defects (HRI 1982), gene mutations (Van Geothem et al. 1981; BRL 1982) or cancer (Marking 1988). Rotenone was found to have no direct role in fetal development of rats that were fed excruciatingly high concentrations of rotenone. Spencer and Sing (1982) reported that rats that were fed diets laced with 10-1000 ppm rotenone over a 10-day period did not suffer any reproductive dysfunction. Typical concentrations of actual rotenone used in fishery management range from 0.025 to 0.50 ppm and are far below that administered during most toxicology studies.

Similar results determined that birds required levels of rotenone at least 1,000 to 10,000-times greater than is required for lethality in fish (Skaar 2001). Cutkomp (1943) reported that chickens, pheasants and members of lower orders of *Galliformes* were quite resistant to rotenone, and four day old chicks were more resistant than adults. Ware (2002) reports that swine are uniquely sensitive to rotenone and it is slightly toxic to wildfowl, but to kill Japanese quail required 4,500 to 7,000 times more than is used to kill fish.

The EPA (2007) made the following conclusion for birds;

Since rotenone is applied directly to water, there is little likelihood that terrestrial forage items for birds will contain rotenone residues from this use. While it is possible that some piscivorous birds may feed opportunistically on dead or dying fish located on the surface of treated waters, protocols for piscicidal use typically recommend that dead fish be collected and buried, rendering the fish less available for consumption (see Section IV). In addition, many of the dead fish will sink and not be available for consumption by birds. However, whole body residues in fish killed with rotenone ranged from 0.22 µg/g in yellow perch (Perca flavescens) to 1.08 µg/g in common carp (Cyprinus carpio; Jarvinen and Ankley 1998). For a 68 g yellow perch and an 88 g

carp, this represents totals of 15 µg and 95 µg rotenone per fish, respectively. Based on the avian subacute dietary LC_{50} of 4110 mg/kg, a 1000-g bird would have to consume 274,000 perch or 43,000 small carp. Thus, it is unlikely that piscivorous birds will consume enough fish to result in a lethal dose.

Amphibians and Reptiles:

Potential amphibians and reptiles found within the Cherry Creek treatment area include: long-toed salamanders (*Ambystoma macrodactylum*), spotted frogs (*Rana pretiosa*), boreal toads *(Bufo boreas)* (amphibians), and western terrestrial garter (*Thamnophis elegans*) and common garter (*T. sirtalis*) and rubber boa (*Charina bottae*) snakes (reptiles). Rotenone can be toxic to gill-breathing larval amphibians, though air breathing adults are less sensitive. Chandler and Marking (1982) found that Southern Leopard frog tadpoles were between 3 and 10 times more tolerant than fish to Noxfish (5% rotenone formulation). Grisak et al. (2007) conducted laboratory studies on long-toed salamanders, Rocky Mountain tailed frogs (*Ascaphus truei*), and Columbia spotted frogs and concluded that the adults of these species would not suffer an acute response to Prenfish at trout killing concentrations (0.5-1 mg/L) but the larvae would likely be affected. These authors recommended implementing rotenone treatments at times when the larvae are not present, such as the fall, to reduce the chance of exposure to rotenone treated water and potential impacts to larval amphibians. The Cherry Creek treatment would be scheduled for late August or September (prior to brook trout spawning), which would reduce but not eliminate potential impacts to larval amphibians. Any reduction in amphibian abundance would be expected to be short term because of the low sensitivity of adults to rotenone, and the likelihood that many larval amphibians would have metamorphosed to air-breathing ability by late August. A reduced abundance of aquatic invertebrates may temporally impact larval amphibians that prey on these species, though the aquatic invertebrate community would recover rapidly. Reptiles (air-breathing) would not be directly impacted by rotenone treatment, though snakes are known to consume trout which would be temporarily reduced by a piscicide treatment.

It is important to note that many toxicity studies involve subjecting laboratory specimens to unusually high concentrations of rotenone, or conducting tests on animals that would not normally be exposed to rotenone during use in fisheries management.

Based on this information FWP would expect the impacts to non-target organisms in Cherry Creek to range from non-existent to short term and minor.

Comment 5d: The objective of the proposed action is to restore non-hybridized westslope cutthroat trout to Cherry Creek (See comment 5i). Historically westslope cutthroat trout were the only trout species in Cherry Creek. There are likely 500-1000 westslope cutthroat trout that have been stocked over the past 3 years in the reach of stream proposed for treatment. These fish will be salvage prior to treatment with rotenone.

Comment 5f: Dead fish would result from this project. It is possible that osprey or eagles would eat rotenone-killed fish. Bald eagles have been observed at the lakes. Conducting this

project in the fall would not impact bald eagle nesting, and there would be no impacts to bald eagles that consume rotenone-killed fish. The lake would be restocked with fish the following year, so there would be no only minor impacts to bald eagle foraging opportunities. Further, Green Lake and Trapper Lake are located within only a few miles of Cherry and Granite lakes and would continue to provide foraging opportunities for pisciverous birds. See comment 5c for impacts to birds.

The project area is within potential grizzly bear habitat, but there are no known grizzly bears currently inhabiting this area. This project should have little or no impact on grizzly bears because the bears are not dependent on fish in the lake or stream for food. There would be no impact on grizzly bears that consume fish killed by rotenone or consume treated waters (See comment 5c for impacts to mammals). The project would not have an impact on grizzly bears.

The project site is within the range of the lynx. Lynx are not known to be present near the project area and but they may use this area at times. Lynx are not dependant on stream for fish as a source of food. The impacts to this species may include temporary displacement during the treatment when personnel and equipment are present in the drainage. However, there should be no impacts from consuming treated waters or fish killed by rotenone for the same reasons as the grizzly bear. Therefore, impacts to lynx should be minor and temporary. See comment 5c for impacts to mammals.

Westslope cutthroat trout, including some populations of slightly hybridized WCT, are considered a sensitive species. The intent of the proposed project is to remove hybridized WCT from the Cherry Creek drainage in order to expand the range of genetically pure WCT in the Big Hole basin. The removal of hybridized WCT is expected to be a short term and minor impact because genetically pure WCT will be transferred to the Cherry Creek drainage once hybrids are removed. The project will benefit WCT outside of the Cherry Creek drainage by providing an opportunity to "replicate" existing but threatened native WCT populations.

Comment 5g. There is the potential for displacement of some animals during the implementation of this project (see Comment 5f). Mule deer, elk and other big game species may be temporarily displaced as crews are present in the drainage performing the proposed work. However, these impacts should only be minor and temporary. Motorized access is currently present throughout most of the drainage and our presence will likely represent only a small and temporary increase in human activity in the drainage.

B.HUMAN ENVIRONMENT

6. NOISE/ELECTRICAL EFFECTS **Will the proposed action result in:**	**IMPACT Unknown**	**None**	**Minor**	**Potentially Significant**	**Can Impact Be Mitigated**	**Comment Index**
a. Increases in existing noise levels?		X				
b. Exposure of people to serve or nuisance		X				

noise levels?						
c. Creation of electrostatic or electromagnetic effects that could be detrimental to human health or property?		X				
d. Interference with radio or television reception and operation?		X				

7. LAND USE **Will the proposed action result in:**	**IMPACT Unknown**	**None**	**Minor**	**Potentially Significant**	**Can Impact Be Mitigated**	**Comment Index**
a. Alteration of or interference with the productivity or profitability of the existing land use of an area?			X			7a
b. Conflicted with a designated natural area or area of unusual scientific or educational importance?		X				
c. Conflict with any existing land use whose presence would constrain or potentially prohibit the proposed action?		X				
d. Adverse effects on or relocation of residences?		X				

Comment 7a. The application of rotenone to Cherry Creek will require that irrigation diversions be temporarily closed while rotenone is present in the stream. This could cause a minor disruption in irrigation scheduling and land productivity to comply with the stipulations on the rotenone label. This can be mitigated by conducting the treatment of Cherry Creek during non-peak irrigation times (early summer or fall). The impacts are expected to be minimal because diversion would only be closed for 24-48 hours. FWP will coordinate with water right holders to minimize any potential impacts to irrigation.

8. RISK/HEALTH HAZARDS **Will the proposed action result in:**	**IMPACT Unknown**	**None**	**Minor**	**Potentially Significant**	**Can Impact Be Mitigated**	**Comment Index**
a. Risk of an explosion or release of hazardous substances (including, but not limited to oil, pesticides, chemicals, or radiation) in the event of an accident or other forms of disruption?			X		YES	8a
b. Affect an existing emergency response or emergency evacuation plan or create a			X		YES	8b

need for a new plan?						
c. Creation of any human health hazard or potential hazard?			X		YES	8ac
d. Will any chemical toxicants be used?			X		YES	8a

Comment 8a: The principal risk of human exposure to hazardous materials from this project would be limited to the applicators. All applicators would wear safety equipment required by the product label and MSDS sheets. Such safety equipment may include respirator, goggles, rubber boots, Tyvek overalls, and Nitrile gloves. All applicators would be trained on the safe handling and application of the piscicide. At least one Montana Department of Agriculture certified pesticide applicators would supervise and administer the project. Materials would be transported, handled, applied and stored according to the label specifications to reduce the probability of human exposure or spill.

Comment 8b: FWP requires a treatment plan for rotenone projects. This plan addresses many aspects of safety for people who are on the implementation team such as establishing a clear chain of command, training, delegation and assignment of responsibility, clear lines of communication between members, a spill contingency plan, first aid, emergency responder information, personal protective equipment, monitoring and quality control, among others. Implementing this project should not have any impact on existing emergency plans. Because an implementation plan has been developed by FWP the risk of emergency response is minimal and any affects to existing emergency responders would be short term and minor.

Comment 8c: The EPA (2007) conducted an analysis of the human health risks for rotenone and concluded it has a high acute toxicity for both oral and inhalation routes, but has a low acute toxicity for dermal route of exposure. It is not an eye or skin irritant nor a skin sensitizer. The EPA could not provide a quantitative assessment of potentially critical effect on neurotoxicity risks to rotenone users, so a number of uncertainty factors were assigned to the rating values. They are; an additional 10x database uncertainty factor - in addition to the inter-species (10x) uncertainty factor and intra-species (10x) uncertainty factor – has been applied to protect against potential human health effects and the target margin of exposure (MOE) is 1000. The following table summarizes the EPA toxicological endpoints of rotenone (from EPA 2007);

Exposure Scenario	**Dose Used in Risk Assessment, Uncertainty Factor (UF)**	**Level of Concern for Risk Assessment**	**Study and Toxicological Effects**
Acute Dietary (females 13-49)	NOAEL = 15 mg/kg/day UF = 1000 aRfD = 15 mg/kg/day = 0.015 mg/kg/day 1000	Acute PAD = 0.015 mg/kg/day	Developmental toxicity study in mouse (MRID 00141707, 00145049) LOAEL = 24 mg/kg/day based on increased resorptions
Acute Dietary (all populations)	An appropriate endpoint attributable to a single dose was not identified in the available studies, including the developmental toxicity studies.		

Chronic Dietary (all populations)	NOAEL = 0.375 mg/kg/day UF = 1000 cRfD = 0.375 mg/kg/day = 0.0004 mg/kg/day 1000	Chronic PAD = 0.0004 mg/kg/day	Chronic/oncogenicity study in rat (MRID 00156739, 41657101) LOAEL = 1.9 mg/kg/day based on decreased body weight and food consumption in both males and females
Incidental Oral Short-term (1-30 days) Intermediate-term (1-6 months)	NOAEL = 0.5 mg/kg/day	Residential MOE = 1000	Reproductive toxicity study in rat (MRID 00141408) LOAEL = 2.4/3.0 mg/kg/day [M/F] based on decreased parental (male and female) body weight and body weight gain
Dermal Short-, Intermediate-, and Long-Term	NOAEL = 0.5 mg/kg/day 10% dermal absorption factor	Residential MOE = 1000 Worker MOE = 1000	Reproductive toxicity study in rat (MRID 00141408) LOAEL = 2.4/3.0 mg/kg/day
Inhalation Short-term (1-30 days) Intermediate-term (1-6 months)	NOAEL = 0.5 mg/kg/day 100% inhalation absorption factor	Residential MOE = 1000 Worker MOE = 1000	[M/F] based on decreased parental (male and female) body weight and body weight gain
Cancer (oral, dermal, inhalation)	Classification; No evidence of carcinogenicity		

UF = uncertainty factor, NOAEL = no observed adverse effect level, LOAEL = lowest observed adverse effect level, aPAD = acute population adjusted dose, cPAD = chronic population adjusted does, RfD = reference dose, MOE = margin of exposure, NA = Not Applicable

Rotenolenoids are common degradation products found in the parent plant material used to make piscicidal forms of rotenone. The EPA (2007) concluded these degradation products are no more toxic than the active ingredient.

The EPA analysis of acute dietary risk for both food and drinking water concluded;

> *"…When rotenone is used in fish management applications, food exposure may occur when individuals catch and eat fish that either survived the treatment or were added to the water body (restocked) prior to complete degradation. Although exposure from this route is unlikely for the general U.S. population, some people might consume fish following a rotenone application. EPA used maximum residue values from a bioaccumulation study to estimate acute risk from consuming fish from treated water bodies. This estimate is considered conservative because the bioaccumulation study measured total residues in edible portions of fish including certain non-edible portions (skin, scales, and fins) where concentrations may be higher than edible portions (tissue)*

and the Agency assumed that 100% of fish consumption could come from rotenone exposed fish. In addition, fish are able to detect rotenone's presence in water and, when possible, attempt to avoid the chemical by moving from the treatment area. Thus, for partial kill uses, surviving fish are likely those that have intentionally minimized exposure.

Acute exposure estimates for drinking water considered surface water only because rotenone is only applied directly to surface water and is not expected to reach groundwater. The estimated drinking water concentration (EDWC) used in dietary exposure estimates was 200 ppb, the solubility limit of rotenone. The drinking water risk assessment is conservative because it assumes water is consumed immediately after treatment with no degradation and no water treatment prior to consumption.

Acute dietary exposure estimates result in dietary risk below the Agency's level of concern. Generally, EPA is concerned when risk estimates exceed 100% of the acute population adjusted dose (aPAD). The exposure for the "females 13-49 years old" subgroup (0.1117 mg/kg/day) utilized 74% of the aPAD (0.015 mg/kg/day) at the 95th percentile (see Table 5). It is appropriate to consider the 95th percentile because the analysis is deterministic and unrefined. Measures implemented as a result of this RED will further minimize potential dietary exposure (see Section IV)..."

As for evaluating the human chronic risk from exposure to rotenone treated water, the EPA acknowledges the four principle reasons for concluding there is a low risk. First, the rapid natural degradation of rotenone. Second, using active detoxification measures by applicators such as potassium permanganate. Next, properly following piscicide labels which prohibit the use near water intakes. Finally, proper signing, public notification, or area closures which limit public exposure to rotenone treated water.

As for recreational exposure, the EPA concludes no risk to adults who enter treated water following the application by dermal and incidental ingestion, but requires a waiting period of 3 days after a treatment before toddlers swim in treated water. The aggregate risk to human health from food, water and swimming does not exceed the EPA level of concern (EPA 2007). Recreationists in the area would likely not be exposed to the treatments because signs would be in place to warn recreationists that the stream and lakes are being treated with rotenone and closed to entry. Proper warning through news releases, signing the project area, temporary road closure and administrative personnel in the project area should be adequate to keep unintended recreationists from being exposed to any treated waters.

Fisher (2007) conducted an analysis of the inert constituent ingredients found in the rotenone formulation of CFT Legumine for the California Department of Fish and Game. These inert ingredients are principally found in the emulsifying agent Fennodefo[99] which helps make the generally insoluble rotenone more soluble in water. The constituents were considered because of their known hazard status and not because of their concentrations in the Legumine formulation. Solvents such as xylene, trichloroethylene (TCE) and tetrachloroethylene are residue left over from the process of extracting rotenone from the root and can be found in some lots of Legumine. However, inconsistent detectability and low occurrence in other formulations that

used the same extraction process were below the levels for human health and ecological risk. Solvents such as toluene, n-butylbenzene, 1,2,4 trimethylbenzene and naphthalene are present in Legumine, and when used in other applications can be an inhalation risk. However, because of their low concentrations in this formulation, the human health risk is low. The remaining constituents, the fatty acid esters, resin acids, glycols, substituted benzenes, and 1-hexanol were likewise present but either analyzed, calculated or estimated to be below the human health risk levels when used in a typical fish eradication project.

Methyl pyrrolidone is also found in Legumine. It is known to have good solvency properties and is used to dissolve a wide range of compounds including resins (rotenone). Analysis of Methyl pyrrolidone in Legumine showed it represents about 9% of the formulation (Fisher 2007). The analysis concluded regarding the constituent ingredients in Legumine;

> "…None of the constituents identified are considered persistent in the environment nor will they bioaccumulate. The trace benzenes identified in the solvent mixture of CFT Legumine™ will exhibit limited volatility and will rapidly degrade through photolytic and biological degradation mechanisms. The PEGs are highly soluble, have very low volatility, and are rapidly biodegraded within a matter of days. The fatty acids in the fatty acid ester mixture (Fennodefo99™) do not exhibit significant volatility, are virtually insoluble, and are readily biodegraded, although likely over a slightly longer period of time than the PEGs in the mixture. None of the new compounds identified exhibit persistence or are known to bioaccumulate. Under conditions that would favor groundwater exchange the highly soluble PEGs could feasibly transmit to groundwater, but the concentrations in the reservoir, and the rapid biodegradation of these constituents makes this scenario extremely unlikely. Based upon a review of the physicalchemistry of the chemicals identified, we conclude that they are rapidly biodegraded, hydrolyzed and/or otherwise photolytically oxidized and that the chemicals pose no additional risk to human health or ecological receptors from those identified in the earlier analysis. None of the constituents identified appear to be at concentrations that suggest human health risks through water, or ingestion exposure scenarios and no relevant regulatory criteria are exceeded in estimated exposure concentrations…"

The Legumine MSDS states "…when working with an undiluted product in a confined space, use a non-powered air purifying respirator…and… air-purifying respirators do not protect workers in oxygen-deficient atmospheres…" It is not likely that workers would be handling Legumine in an oxygen deficient space during normal use. However, to guard against this, proper ventilation and safety equipment would be used according to the label requirements.

The advantage of CFT Legumine over Prenfish is that it has less petroleum hydrocarbon solvents such as toluene, xylene, benzene and naphthalene. By comparison, Prenfish has a strong chemical odor. CFT Legumine is virtually odor-free and performs almost identically to Prenfish.

In their description of how South American Indians prepare and apply *Timbó*, a rotenone parent plant, Teixeira, et al. (1984) reported that the Indians extensively handled the

plants during a mastication process, and then swam in lagoons to distribute the plant pulp. No harmful effects were reported. It is important to note that the primitive method of applying rotenone from root does not involve a calculated target concentration, metering devices or involve human health risk precautions as those involved with fisheries management programs.

9. COMMUNITY IMPACT **Will the proposed action result in:**	**IMPACT Unknown**	**None**	**Minor**	**Potentially Significant**	**Can Impact Be Mitigated**	**Comment Index**
a. Alteration of the location, distribution, density, or growth rate of the human population of an area?		X				
b. Alteration of the social structure of a community?		X				
c. Alteration of the level or distribution of employment or community or personal income?		X				
d. Changes in industrial or commercial activity?		X				
e. Increased traffic hazards or effects on existing transportation facilities or patterns of movement of people and goods?		X				

10. PUBLIC SERVICES/TAXES/UTILITIES **Will the proposed action result in:**	**IMPACT Unknown**	**None**	**Minor**	**Potentially Significant**	**Can Impact Be Mitigated**	**Comment Index**
a. Will the proposed action have an effect upon or result in a need for new or altered governmental services in any of the following areas: fire or police protection, schools, parks/recreational facilities, roads or other public maintenance, water supply, sewer or septic systems, solid waste disposal, health, or other governmental services? If any, specify: _____		X				
b. Will the proposed action have an effect upon the local or state tax base and revenues?		X				

c. Will the proposed action result in a need for new facilities or substantial alterations of any of the following utilities: electric power, natural gas, other fuel supply or distribution systems, or communications?		X				
d. Will the proposed action result in increased used of any energy source?		X				
e. Define projected revenue sources		X				
f. Define projected maintenance costs		X				

11. AESTHETICS/RECREATION **Will the proposed action result in:**	**IMPACT Unknown**	**None**	**Minor**	**Potentially Significant**	**Can Impact Be Mitigated**	**Comment Index**
a. Alteration of any scenic vista or creation of an aesthetically offensive site or effect that is open to public view?		X				
b. Alteration of the aesthetic character of a community or neighborhood?		X				
c. Alteration of the quality or quantity of recreational/tourism opportunities and settings? (Attach Tourism Report)		X				See 11c
d. Will any designated or proposed wild or scenic rivers, trails or wilderness areas be impacted? (Also see 11a, 11c)		X				

Comment 11c: Very little angling occurs in Cherry Creek due to the dense nature of the streamside vegetation. There will be a temporary loss of the fishery in the section of stream that would be treated with rotenone but these impacts should be minor and temporary. Once the stream is restocked and the fish are naturally reproducing angling opportunities should be the same.

12. CULTURAL/HISTORICAL RESOURCES **Will the proposed action result in:**	**IMPACT Unknown**	**None**	**Minor**	**Potentially Significant**	**Can Impact Be Mitigated**	**Comment Index**
a. Destruction or alteration of any site, structure or object of prehistoric historic, or paleontological importance?		X				
b. Physical change that would affect unique cultural values?		X				
c. Effects on existing religious or sacred		X				

uses of a site or area?						
d. Will the project affect historic or cultural resources?		X				

13. SUMMARY EVALUATION OF SIGNIFICANCE **Will the proposed action, considered as a whole:**	**IMPACT Unknown**	**None**	**Minor**	**Potentially Significant**	**Can Impact Be Mitigated**	**Comment Index**
a. Have impacts that are individually limited, but cumulatively considerable? (A project or program may result in impacts on two or more separate resources which create a significant effect when considered together or in total.)		X				13a
b. Involve potential risks or adverse effects which are uncertain but extremely hazardous if they were to occur?		X				
c. Potentially conflict with the substantive requirements of any local, state, or federal law, regulation, standard or formal plan?		X				
d. Establish a precedent or likelihood that future actions with significant environmental impacts will be proposed?		X				
e. Generate substantial debate or controversy about the nature of the impacts that would be created?			X		yes	13e
f. Is the project expected to have organized opposition or generate substantial public controversy? (Also see 13e)			X			13f
g. List any federal or state permits required.						13g

Comment 13a: No cumulative impacts are anticipated by implementing the proposed action.

Comments 13e and f: The use of piscicide can generate controversy from some people. In the case of Cherry Creek which has been treated previously it is possible that the public will be displeased with the idea of treating the stream again. It is not known if this project would have organized opposition.

Comment 13g: The following permit would be required:

A Notice of Intent for the purpose of applying a pesticide to a stream would be submitted to Montana DEQ the project would be covered under FWP's Pesticide General Permit.

PART IV. ENVIRONMENTAL IMPACT STATEMENT REQUIRED?

After considering the potential impacts of the proposed action and possible mitigation measures, FWP has determined that an Environmental Impact Statement is not warranted. The impacts of WCT restoration as described in this document are minor and/or temporary and mitigation for many of the impacts is possible. The primary impacts as a result of this project are temporary reductions in aquatic invertebrate abundance as a result of toxic effects of rotenone. Impacts to aquatic invertebrates have been shown to be short term (1-2 years) and minor and invertebrate communities are very resilient to the impacts of rotenone.

Prepared by: Jim Olsen, Fisheries Biologist Date: September 30, 2016

Submit written comments to: Montana Fish, Wildlife & Parks
c/o Cherry Creek Supplemental EA comments
1820 Meadowlark Ln.
Butte, MT 59701

Montana Fish, Wildlife & Parks invites you to comment on the proposal. Public comment will be accepted until October 14th, 2016 @ 5:00 pm.

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